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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,507	10/27/2007	Takafumi Matsumoto	029567-00009	9804

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EXAMINER

HILTON, ALBERT

ART UNIT	PAPER NUMBER
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1716

NOTIFICATION DATE	DELIVERY MODE
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09/15/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/588,507	Applicant(s) MATSUMOTO ET AL.	
	Examiner Albert Hilton	Art Unit 1716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14 is/are rejected.
- 7) ☒ Claim(s) 13, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-7, 9, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Maydan (US Patent No. 5224809).

1. Regarding claim 1, it is noted that the recitation of a “means for securing” appears to invoke the provisions of 35 U.S.C. 112, 6th paragraph, and has been interpreted in accordance with the disclosure to refer to a securing device (Specification: paragraph 40) or art-recognized equivalent means.
2. Regarding claim 1, Maydan describes an apparatus comprising a plurality of substrates (**wafers 17**) held on the outer circumferential surface of a substrate holder (**hexode 18**) that is rotatable about a rotating shaft (*i.e.*, the base of **hexode 18**) while the substrate holder (**18**) is rotated in an evacuable chamber (**chamber 6**) (column 7, lines 25-39 and Fig. 1), the apparatus further comprising a transferring device (**robot 60, robot actuator arm 64**) that transfers a substrate that is removably securable onto the outer circumferential surface of the substrate holder (**18**) in the evacuable chamber (**6**) (column 8, lines 55-68 to column 9, lines 1-24, column 9, lines 54-68, and Figs. 5, 21), and a means for releasably securing (**wafer clips 50**) the substrate transferred by

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the transferring device (**60**) onto the circumferential surface of the substrate holder (**18**) (column 8, lines 34-55 and Figs 2, 4).

3. Regarding claim 5, both the transferring action of the transferring device and the securing action by the means for releasably securing the substrates in the apparatus of Maydan are performed in a depressurized environment, in that the **chamber 6** is evacuated by **turbo pump 31** and **chamber 7** is evacuated by **cryo pump 34** (column 7, lines 50-66, Fig. 1).

4. Regarding claim 6, the releasing action of the means for releasably securing (**clips 50**) substrates is actuated by a robot (**60**) that is controlled by an electric signal from a controller (**controller 10**) (column 15, lines 61-68, column 17, lines 52-61).

5. Regarding claim 7, the means for releasably securing in the apparatus of Maydan comprises a mechanism to hold the substrate by pressing with a retaining member means (**clip 50, spring 54**), and a mechanism to release the substrate from the holding by compressing the retaining means member by a drive unit (**actuating arm 64**, which compresses **spring 54**) mounted outside of the substrate holder (column 8, lines 47-59, column 9, lines 1-5, and Fig. 4).

6. Regarding claim 9, the transferring device of Maydan is installed in a transferring chamber (**robot 60, robot actuator arm 64**) is installed in a transferring chamber (**chamber 7**) that is connected to the evacuable chamber (**chamber 6**) via a valve (**gate valve assembly 9**) (column 7, lines 2-5, column 8, lines 55-68 to column 9, lines 1-24, and Fig. 1). The transferring chamber (**7**) is evacuable via **cryo pump 34** (column 7, lines 50-66, Fig. 1).

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7. Regarding claim 14, Maydan describes a means for releasably securing (**clip 50**) comprising an upper securing member (**50**) and a lower securing member (**pedestal 22**) (column 8, lines 44-49 and Fig. 4). While Maydan explicitly describes a mechanism for holding a substrate rather than a substrate fixing jig, the use of the securing member to secure a jig rather than a substrate represents a claim of intended use that does not patentably distinguish the structure of the claimed invention from a prior art structure capable of being operated in the same manner (see MPEP 2114). The securing means of Maydan is capable of holding a substrate fixing jig.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan.

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8. Regarding claim 2, the substrate holder (**18**) of Maydan is installed rotatably about a vertical rotating shaft rather than a horizontal rotating shaft (column 7, lines 25-39 and Fig. 1), and the transferring means (**60**) transfers the substrate in a horizontal direction (Maydan: Fig. 1) However, one of ordinary skill in the art at the time of the invention would recognize that modifying the apparatus of Maydan such that the shaft rotates about a horizontal axis would represent an obvious rearrangement of parts that would not alter the function of the apparatus in a patentably distinct way or produce any new and unexpected benefit (see MPEP 2144.04).

9. Regarding claim 3, modifying the apparatus of Maydan such that the shaft rotates about a horizontal axis would result in an apparatus in which the transferring means (**60**) transfers the substrate in the axial direction (horizontal) of the rotating shaft. Such an alteration would represent an obvious rearrangement of parts that would not alter the function of the apparatus in a patentably distinct way or produce any new and unexpected benefit (see MPEP 2144.04).

Regarding claim 4, modifying the apparatus of Maydan such that the shaft rotates about a horizontal axis would result in an apparatus in which the transferring means (**60**) transfers the substrate in a direction parallel to the outer circumferential surface of the substrate holder (**8**) (Fig. 1). Such an alteration would represent an obvious rearrangement of parts that would not alter the function of the apparatus in a patentably distinct way or produce any new and unexpected benefit (see MPEP 2144.04).

10. Regarding claim 10, Maydan describes a transferring chamber (**chamber 7**) connected to an evacuable chamber (**chamber 6**) via a valve (**gate valve assembly 9**)

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(column 8, lines 55-68 to column 9, lines 1-24, and Fig. 1), but does not explicitly describe a further evacuable load/unload chamber connected to the transferring chamber via a valve. However, the use of another evacuable chamber connected via a valve would represent an obvious duplication of parts that would not alter the operation apparatus in a patentably distinct way over the apparatus of Maydan (see MPEP 2144.04).

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan as applied to claims 1-7 above, and in further view of Yoshioka (US Patent Application No. 2002/0079057).

12. Regarding claim 8, Maydan describes a mechanism (50) to hold a substrate, but does not describe mechanism in which the securing mechanism secures the jig by magnetic force. However, Yoshioka describes an apparatus in which a work piece is held and transferred in a vacuum using a magnetic force (**magnetic chuck**), and that such a magnetically-actuated holder can be used to transfer the substrate through the load-lock chambers of the apparatus without exposing the substrate to the atmosphere (Yoshioka: paragraph 85). One of ordinary skill in the art at the time of the invention would have recognized the use of a magnetic securing means to hold and transfer a substrate in a vacuum chamber as the obvious selection of an art-recognized solution for the same intended use (see MPEP 2144.07).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan as applied to claims 1-10 above, and further in view of Stevenson (US Patent No. 5421979).

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13. Regarding claim 11, Maydan describes a processing chamber (column 3, lines 30-35), but does not explicitly describe a sputtering deposition or CVD mechanism.

However, Stevenson teaches a substrate transport system comprising a rotating substrate holding system (**substrate transporter 100**) in which a sputtering process is used to deposit a film (Stevenson: column 1, lines 13-19, column 6, lines 56-64, and Fig. 1). One of ordinary skill in the art at the time of the invention, desiring to form a surface coating on a substrate in the apparatus of Maydan, would have found the use of a sputter technique in the process chamber to be an obvious use of an art-recognized method that would not provide any new and unexpected benefit.

14. **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan as applied to claims 1-5 and 11 above, and in further view of Tezuka (US Patent No. 4771730).**

15. Regarding claim 12, Maydan teaches the use of a processing chamber to process a substrate, but does not explicitly teach one of a plasma exposure means, an ion irradiating means, or an etching means. However, it was known in the art at the time of the invention, as taught by Tezuka, that sputtering, ion etching, and plasma CVD are all common techniques for processing a substrate in a vacuum chamber (Tezuka: column 1, lines 6-18). One of ordinary skill in the art at the time of the invention, motivated by a need to process the substrate in the apparatus of Maydan via ion etching or plasma CVD would therefore have found it obvious to install a plasma exposing means, an etching means, or an ion irradiation means to the processing chamber of Maydan with no new and unexpected benefit.

Allowable Subject Matter

Claims 13 and 15-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. Regarding claim 13, Maydan describes a securing means (**clip 50**) wherein the substrate is held against the substrate holder (**pedestal 22**) (Fig. 4), but does not teach a bent substrate fixing jig and a gap between the substrate fixing jig and the substrate holder when the substrate jig is mounted to the holder.

17. Claims 15-16 are dependent on claim 13.

Response to Arguments

18. Applicant argues that the art referenced in the previous rejection did not describe an apparatus in which the substrates are held on the outer circumferential surface of a substrate holder. The instant action mends this, as Maydan describes substrates held on the outer circumferential surface of a substrate holder (**hexode 18**) (column 7, lines 25-39 and Fig. 1).

19. This action is made **non-final**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert Hilton whose telephone number is (571)-270-5519. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Albert Hilton/
Examiner, Art Unit 1716

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1716